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One of the links in the chain of preventive measures against infectious animal diseases is high-quality biological and chemico-therapeutic preparations, the output of which is dependent upon the State Scientific-Control Institute. In 1949, the institute will continue its work in the directed biological change of the carriers of a number of microorganisms and ultra-viruses for the purpose of obtaining new vaccines for diseases which have no approved vaccines (brucellosis, hoof and mouth disease, hemorrhagic septicemia, etc.)

Experimental studies in 1949 will be based on the thorough study of the biology of carriers of infectious diseases plus the study of the complex interaction process between the animal organism and the carrier of the disease.

Prof M. K. Yuskovets will conduct work this year in the search for a new brucellosis vaccine. A study will be made of the characteristics of brucellosis cultures of different species isolated from infected animals in different geographical localities. After these species have been changed by the action of the external medium and a check of the immunogenic properties has been made in animals, species with the most marked immunogenic properties will be selected.

Stalin Prize Laureate, N. V. Likhachev, Doctor of Veterinary Sciences, will carry on his work in seeking new vaccines for use against certain ultra-virus animal diseases by the directed change of carriers.

We know a number of viruses whose virulence changes greatly, but whose immunogenic properties are retained when they are cultivated in chicken embryos (plague virus of large horned cattle, pseudo-plague virus of fowl, virus of measles, etc.). These peculiarities will be studied for the purpose of obtaining new vaccines for use against these ultravirus diseases. Work will also be continued on the use of a number of viruses found in the organisms of animals and birds which are only slightly receptive to these viruses for the purpose of obtaining a race with changed properties and also to strengthen these properties in succeeding generations.

A field of study will be introduced this year in connection with the obtaining of new "deposited" vaccines. This involves obtaining vaccines which will be effective against a number of etiologically different diseases by the same principle which is utilized for obtaining other vaccines. The cultures will be raised in the best media for these microorganisms, and certain chemical substances will be added to these killed vaccines for slower resolution of the antigen introduced into the animal organism. Small-scale production of these vaccines and tests in animal husbandry will be organized this year.

The most favorable conditions for their development (enriched media, perfected cultivation conditions, etc.) will be created. Special consideration will be given to the biological peculiarities of the organisms so that the microorganisms may produce the largest possible amount of antigenic substances.

There are a number of preparations whose immunogenic properties are not evaluated during the production stages because the method of evaluation was not proposed by the persons who devised these preparations. Objective methods of evaluating the effectiveness of manufacture biological preparations are also necessary. To remedy this defect the institute has established programs to find methods for checking leptospirosis vaccine and serum, and serums for colibacteriosis. Factors causing complications with the use of certain vaccines will also be studied.

A special division in this project will be assigned to the search for and study of new chemiotherapeutic agents for hemospodiosis in animals. The institute undertook the task of producing a preparation with polytropic

- 2 -

CONFIDENTIAL

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CONFIDENTIAL

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properties for the treatment of hemosporidiosis in large and small horned cattle and in horses. Recently, A. I. Shmulevich, Candidate in Veterinary Sciences, and G. A. Garkusha, Candidate in Chemical Sciences, prepared a new synthetic, thioargen, which proved polytropic for the treatment of piroplasmosis in large and small horned cattle. This synthetic will be thoroughly tested for its effectiveness against natural forms of hemosporidiosis of large and small horned cattle and piroplasmosis and nuttalliosis in horses.

The institute provides all institutions which are concerned with the production of biological preparations with cultures, matrices, and viruses necessary for the production of vaccines and antigens.

Systematic work with cultures has been conducted in the institute for quite some time, but this work has been one-sided with consideration given only to the antigenic properties of the culture. Work on the systematic biological change in cultures has not been carried out, and new cultures with high immunogenic properties have not been developed. When cultures and viruses are kept under laboratory conditions, they change continuously according to the conditions under which they are stored. Microbes which are isolated from the living organism, cultivated, and preserved under laboratory conditions, develop new ecological trends. Feeding, growth, and multiplication of microbes take place in nutritive substrates artificially created by the investigator. Naturally, changes take place, i.e., decrease or intensification of specific functions (virulence, antigenicity, agglutinability, capsule formation, sporogenesis).

It is possible to change the biological properties of the culture and to intensify the necessary properties by changing the nutritive media. The BCG vaccine was obtained from virulent bovine tubercle bacilli after 280 consecutive inoculations in potato media containing oil. Zhukov-Varezhnikov obtained the plague vaccine culture "M-74" from growths of a plague culture which was stored over a long period under controlled laboratory conditions.

The personnel of the institute will also continue work on qualitative control of biological preparations whose use is followed by unfavorable reactions. Such preparations will be subjected to careful biological tests on animals. A specific check of a series of preparations released by state controllers at the biologicals factories will be conducted and if necessary the production processes will be corrected.

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- 3 -

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